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DETERRENCE BY ANTI-MISSILES: Examining the Proposition That World Peace Can Be Maintained Only by Extreme Escalation

ONE of the basic facts about nuclear weapons is that few people really believe or can imagine that they will ever be used. As a result, any discussion of nuclear plans and possibilities assumes a certain air of unreal horror. And yet, short of a drastic change in the international situation or in human nature, the leaders responsible for a nation's security cannot rule out the possibility of a nuclear war. Hence, one of the most painful and long-deferred decisions facing Washington is whether or not the U.S. should install an anti-missile defense system. The U.S. and Russia are close to agreeing on a treaty curbing the spread of nuclear weapons to non-nuclear powers. Yet despite that hopeful turn, warned President Johnson last week, the two nations have reached a "watershed" in arms competition and are risking further "futile escalation" in the area of missile defense.

According to intelligence reports, Soviet Russia is even now beginning to deploy a defense system designed to protect its major cities against attack by intercontinental ballistic missiles. American military men want the U.S. to counter by installing a vast anti-ballistic missile (ABM) system of its own. The Administration hopes to avoid this and is attempting to persuade the Russians to enter an agreement under which neither the U.S. nor the Soviets would deploy ABMs; to that end, U.S. Ambassador Llewellyn Thompson is now holding talks with Soviet Premier Alexei Kosygin. In London two weeks ago, Kosygin made a press-conference statement that seemed to discourage an ABM ban. A system that deters attack, said the Premier, is not a factor in the arms race. "On the contrary, it is a factor that reduces the possibility of the destruction of people."

On the face of it, this sounded eminently reasonable. Yet Kosygin must know that the implications of either a Russian or American ABM buildup cannot so easily be brushed aside.

Whether nuclear weapons are offensive or defensive depends largely on the point of view. The U.S., which has concentrated on offensive weapons, has always insisted that it maintains a defensive stance and would never make the first attack. But it has promised that any sneak attack it might suffer, no matter how damaging, would trigger an automatic response so terrible as to be intolerable to any enemy.

The threat is convincing—but only so long as a potential enemy accepts its basic premise. What if he decides that his scientists and engineers have built a practically perfect defense so that he will not be wiped out by a retaliatory attack? This would obviously disturb the "balance of terror" that has preserved an uneasy nuclear peace for the past two decades. Some American military men argue that any "defensive" Russian ABM system may actually be a sign of belligerence, a signal that its builders are preparing to make the first strike, while getting ready to ride out the U.S. response. Besides, the cold logic of deterrence works only when the opponent is capable of understanding it. What if the uneasy ruler of a new nuclear power were to make an irrational decision that he had more to gain than to lose from an attack on the U.S., whatever the risk of retaliation?

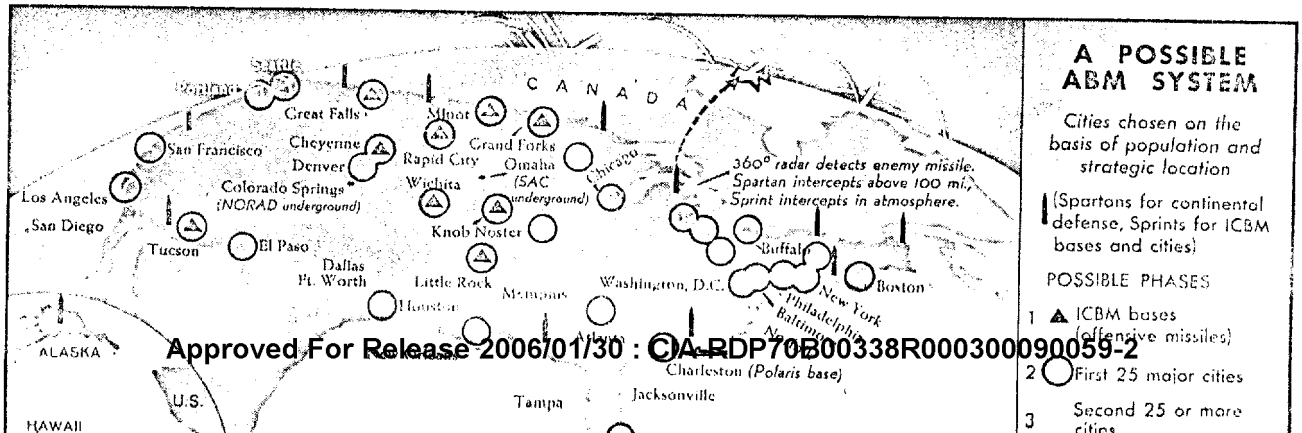
If the Joint Chiefs have their way, the answer to all such questions will be the installation of a U.S. Nike-X ABM system, beginning with the building of a "thin" continental defense consisting of long-range, Spartan missiles capable of intercepting and destroying incoming ICBMs above the atmosphere. As a backstop, fast, short-range Sprint missiles, designed to intercept any missiles that penetrated the Spartan screen, would be set out to protect U.S. Minuteman missile bases. This first phase of ABM deployment, which would afford protection against accidental firings of Soviet missiles or a surprise attack by China, has a price tag of about $5 billion. For another $5 billion, the military men would place Sprints around 25 key U.S. cities, providing protection against a moderate-strength Soviet attack. The third phase of the plan, at a price of $10 billion, would extend Sprint coverage to another 25 U.S. cities and increase the number of missiles protecting each city to cope with a massive attack. Total predicted cost, including fallout shelters: $22 billion.

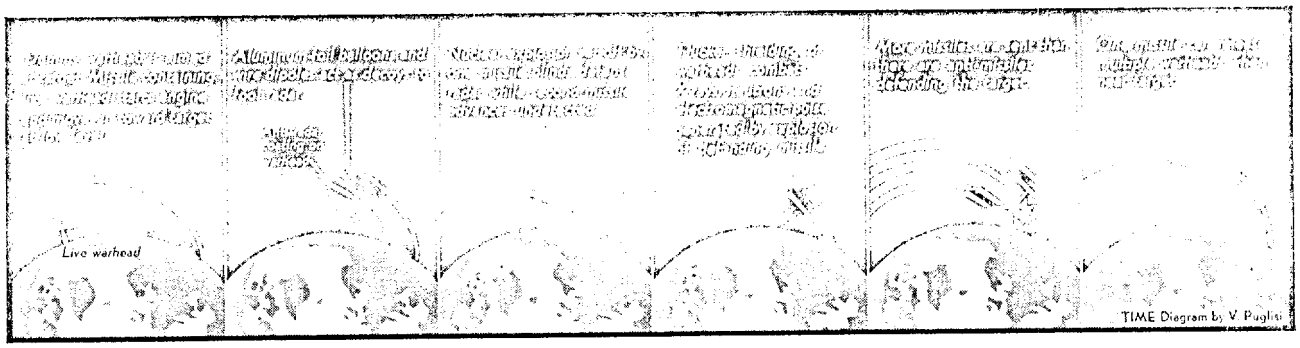
How It Works

Defense Secretary Robert McNamara, for one, believes that political pressures would boost the bill. "The unprotected, or relatively unprotected areas of the U.S.," he says, "would claim that their tax dollars were being diverted to protect New York and Washington while they were left naked." McNamara guesses that an ABM system would cost about $40 billion over a ten-year period.

That seems a small enough price to pay for protection against a nuclear attack that might otherwise kill more than 120 million Americans. The question is whether any system, no matter how costly, can really buy protection—and how much. The answer lies in the workings of the ABM system.

All ABMs are meant to be nuclear-tipped; the idea is that they will create nuclear explosions that, in one way or another, will damage or destroy incoming missiles. If these explosions occur in the atmosphere, as with Sprint, they can destroy the incoming missiles by heat and blast effect. (Fallout





from these explosions will endanger the defended territory, hence the need for shelters.) If the explosions occur above the atmosphere, as with Spartan, the enemy missiles will not be hurt by blast, since there is no air to carry shock waves, but will be damaged in other ways, especially by the X rays and neutrons released in the explosion. Above the atmosphere, they are not impeded by air molecules, so they can cause damage at greater distances.

Within about two miles from an exploding one-megaton ABM, for example, the heat shield of an intercontinental missile will be severely "burned" by X rays. If the shield is damaged badly enough, the friction generated when the ICBM warhead enters the atmosphere will cause it to burn up long before it reaches its target. The burst of neutrons produced by the explosion of an ABM warhead can have an even more immediate effect on an ICBM warhead as far away as 1½ miles. By penetrating the uranium trigger of the warhead, the neutrons can cause it to fission prematurely, generating enough heat to deform the trigger and disarm the missile. An electromagnetic pulse of radio frequency waves produced by the exploding ABM can also induce damaging surges of electric current in the circuits of the ICBM, preventing its warhead from exploding.

It sounds formidable; yet even the Pentagon admits that the costliest contemplated ABM system cannot buy complete security. Why not? Because scientists have already learned a great deal about how to penetrate an ABM system.

With a double heat shield on an ICBM warhead, for example, the outer shield can be made to take the brunt of X-ray damage, leaving the inner shield to protect the warhead as it descends through the atmosphere. A neutron-blocking layer of paraffin or liquid hydrogen can prevent the uranium trigger from fissioning prematurely. Installation of more rugged electrical components and addition of bypass circuits reduce the possibility of damage from the surge of current caused by an electromagnetic pulse.

The attacking nation can choose from a whole catalogue of ingenious "penetration aids" to baffle enemy defense (*see diagram above*). Dummy missiles may be employed or missiles releasing decoys that defending radar has difficulty differentiating from authentic warheads. A single missile can suddenly eject multiple warheads that separate widely enough so that even a well-aimed ABM will destroy only one of them. An advance high-altitude nuclear explosion can temporarily blind a city's radar defenses or attackers can simply saturate a city with more ICBMs than there are defending missiles.

In view of such penetration methods, if the Soviets were to strike with all of their offensive missiles, enough could penetrate a Nike-X system to kill 30 million Americans. And if the Soviet Union should increase the number and quality of its missiles, U.S. casualties could rise as high as 90 million.

If an ABM system thus cannot really assure adequate protection, why should the Russians bother to deploy one? One possible answer is that their definition of "adequate" may be flexible. Conceivably, Russian strategists may argue that even if an ABM system could not keep out all U.S. missiles, it could keep out enough [illegible] to survive and rebuild. The other and more unsettling possibility is that Russian scientists are on to a better defense system than the U.S. so far contemplates. U.S. military planners remain actually developed a technique that will come up to Khrushchev's boast that a Russian rocket could "hit a fly" in outer space. Rumors have circulated in Washington about Russian "X-ray defense" and "zap" effects of nuclear explosions far bigger than those involved in the Nike-X system—explosions that would effectively clear the skies of most, if not all, U.S. ICBMs, no matter how many were launched.

Less worried U.S. scientists doubt that the Russians have any such super defense weapon. It would be too large and heavy for quick launching or easy, accurate control. Many military planners, moreover, believe that Moscow may only be bluffing with its ABM plans. By constructing a token number of missile sites, say the doubters, the Russians are perhaps hoping to make the U.S. overreact and thereby further strain its economy. There is also some suspicion in Washington that the Russians may use the threat of an ABM installation only to pressure the U.S. into agreeing to an overall limitation of missile capacity. Finally, it is also conceivable, some U.S. experts believe, that the Soviet ABM deployment is not intended to defend against a massive U.S. attack at all, but is a guard against the less formidable missile threat that China might pose as early as the 1970s.

Secretary McNamara adamantly opposes deployment of the Nike-X system and insists that the defensive advantage remains with a credible offensive deterrent. That U.S. deterrent now consists of 1,004 Minuteman and Titan ICBMs and 640 submarine-based Polaris missiles, as against Russia's reported 340 ICBMs and 130 submarine missiles. "It is our ability to destroy an attacker as a viable 20th century nation that provides the deterrent," says McNamara, "not our ability to partially limit damage to ourselves."

Where It May Lead

Yet some strategists worry that the U.S. has become too complacent behind its nuclear-missile superiority. Says Herman Kahn, a mathematician turned defense analyst: "For the past 20 years, the Soviets have lived in an environment in which they were clearly strategically inferior. It would be a mistake to let that change." Most military men agree that if the Russians are really determined to deploy a major ABM system, the U.S. will have to follow suit—although many would be satisfied merely to prepare a "mobilization base" allowing relatively quick development of an ABM system if it later became necessary.

Both sides stand to lose severely from full deployment now. Any new missile race, as President Johnson put it, "would impose on our peoples and on all mankind an additional waste of resources with no gain in security to either side." It would surely damage both the U.S. and Russian economies, though hurting Russia's far more, at a time when Moscow's rulers seem determined to give their people capitalist-style consumer pleasures.

Economics aside, should one nation deploy an effective ABM system before the other, the possibilities of a disastrous nuclear exchange would increase. The nation with missile defenses would be tempted to strike while it had the advan[illegible] attack, might be panicked into striking first. On the other hand, if both nations installed full ABM systems concurrently, the balance of terror would remain the same. But in that case, despite the expendi-